Cognitions in obese binge eaters and obese non-binge eaters

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Cognitions in Obese Binge Eaters and Obese Non-Binge Eaters

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The aim of this study was to examine the frequency and content of several cognitions (negative self-schemas and weight, shape, and eating-focused cognitions) in obese binge eaters and obese non-binge eaters. We used a structured clinical interview to detect differences in cognitions. The majority of obese binge eaters mentioned negative self-schemas that could be characterized as negative generalizations about the self combined with weight, shape, or eating concerns, whereas the majority of obese non-binge eaters mentioned weight, shape, and eating concerns that were not combined with negative generalizations about the self. Participants with negative self-schemas, irrespective of binge category, were more depressed and had lower self-esteem than the other participants. Finally, with respect to the content analyses of negative self-schemas, we found that both groups most often mentioned themes such as rejection, unworthiness, and lack of willpower. However, obese non-binge eaters mentioned more self-schemas regarding lack of willpower, whereas obese binge eaters were more preoccupied with rejection and unworthiness. Implications for future work are discussed, including how cognitive techniques focusing on negative self-schemas might improve treatment for obesity.

KEY WORDS: obese binge eaters; obese non-binge eaters; clinical interview; negative self-schemas; automatic thoughts.

Cognitions such as preoccupation with food and eating and cognitive distortions regarding body image and weight play a central role in the progression and maintenance of eating disorders (Cooper & Fairburn, 1992; Dritschel, Williams, & Cooper, 1991; Garner & Bemis, 1982). In contrast to eating disorders, cognitions about shape, weight, and eating have figured less prominently in etiological theories of obesity. However, some studies have been conducted to examine relationships between cognitive content and the development and maintenance of obesity (Adami

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et al., 1994; Garner, Olmsted, & Polivy, 1983; Hunt & Rosen, 1981; O'Connor & Dowrick, 1987; Phelan, 1987; Sunday, Halmi, Werdann, & Levey, 1992).

In the assessment of cognitions in obesity, two general research methodologies have been used: *in vivo* data collection and retrospective self-statement questionnaires. Hunt and Rosen (1981) used a random time-sampling procedure and collected self-monitored cognitions from normal-weight and obese females. No group differences were found with respect to the frequency and quality of food, eating, and body-image related thoughts. O'Connor and Dowrick (1987) asked normal-weight, obese, and previously obese people to rate belief in and frequency of 26 dysfunctional cognitions concerning weight, food, and eating. Obese participants reported higher belief in dysfunctional food and weight-focused cognitions than normal-weight people. They particularly believed in the combination of extreme cognitions and reflections that signify lack of personal control. In other studies, self-statement questionnaires designed for eating disorders have been administered to obese subjects. Adami et al. (1994) found that all scores of the Eating Disorder Inventory (EDI; Garner et al., 1983) were more elevated for obese persons than for normal-weight subjects. Other studies showed that obese subjects had a less pathologic EDI profile than eating disordered subjects (Garner et al., 1983; Sunday et al., 1992). One study (Phelan, 1987) that used the Bulimic Thoughts Questionnaire found that obese subjects and eating-disordered subjects scored similarly on cognitions about their ability to maintain a desirable weight. However, eating disordered subjects scored higher on cognitions about the unrealistic expectations of what would happen if ''forbidden food'' was consumed as well as about being out of control with food. In sum, the studies mentioned suggest that obese persons hold more dysfunctional cognitions than normal-weight persons, but have less pathologic scores on several measures of cognitions related to weight, shape, food and eating than eating disordered subjects.

In recent years, there has been an increased interest in the exploration of binge eaters as a relatively homogeneous subgroup among the obese. Many studies have found that obese binge eaters experience more severe depression, have lower self-esteem (e.g., Marcus et al., 1990; Mitchell & Mussell, 1995; Telch & Agras, 1994; Yanovski, Nelson, Dubbert, & Spitzer, 1993), and have more severe eating pathology than obese non-binge eaters (e.g., de Zwaan et al., 1995; Eldredge & Agras, 1996; Fichter et al., 1993; Kuehnel & Wadden, 1994; Wilson, Nonas, & Rosenblum, 1993). Wilson et al. (1993) investigated differences in cognitive statements related to weight, shape, and eating between obese binge eaters and obese non-binge eaters, using a self-report version of the Eating Disorder Examination (EDE-Q; Fairburn & Beglin, 1994). When obese binge eaters were compared to obese non-binge eaters, they scored significantly higher in shape concern, weight concern, and eating concern. Another study (Eldredge & Agras, 1996) found that obese binge eaters scored significantly higher on the weight and shape subscale of the EDE-Q than obese non-binge eaters, regardless of weight. Marcus, Smith, Santelli, and Kaye (1992) reported that there were no significant differences between obese binge eaters and bulimia nervosa patients on the shape, weight, and eating subscales of the EDE, except on restraint.

Vitousek and Hollon (1990) suggested that cognitive schemas that include

cognitive generalizations about the self and that are derived from past experiences with weight, shape, and eating concerns constitute the core cognitive structures of eating disorders. Self-schemas are cognitive generalizations about the self, derived from past experience, that organize and guide the processing of the self-related information contained in an individual's social experience (Markus, 1977). A person who is schematic for some dimension processes information relevant to that dimension differently than someone who is aschematic for the dimension (Markus & Sentis, 1982). Schematic subjects are more resistant to information that conflicts with their view of themselves, and are more likely to recognize schema-relevant than schema-irrelevant material. In an experimental design in normal-weight, overweight, and obese individuals, Markus, Hamill, and Sentis (1987) investigated self-schemas pertaining to body weight for their effects on methods of processing weight-relevant information. They found that the objective weight status of an individual did not correspond to method of processing weight-relevant information, but did correspond to the intensity with which an individual is concerned with body weight and with disposition to characterize weight as an organizing feature of the self (schematics). Beck, Wright, Newman, and Liese (1993) proposed that many persons are unable to articulate underlying self-schemas until they have been asked to consider the personal meaning that their shape-, weight-, and eating-related thoughts have for them. In this way, self-schemas can be elucidated that are characterized as negative self-evaluations influenced by weight, shape, or eating. For example, a negative self-schema seen in anorexics and bulimics is: ''If I gain weight, I'm nothing'' (Cooper, Cohen-Tovée, Todd, Wells, & Tovée, 1997).

In this study, a structured clinical interview was used in which obese binge eaters and obese non-binge eaters were asked to mention cognitions related to shape, weight, and eating. Furthermore, underlying shape-, weight-, and eating-related negative self-schemas were explored. The aim of the present study was to examine, in depth, the content and number of negative self-schemas, as well as weight-, shape-, and eating-focused cognitions in obese binge eaters and obese non-binge eaters.

METHOD

Subjects

Selected participants were 74 obese women, including 37 women who met the proposed DSM-IV (APA, 1994) criteria for Binge Eating Disorder (BED), and 37 non-binge eaters. They were selected from a group of respondents who answered local newspaper advertisements offering a university-based treatment for eating problems. Respondents received the Questionnaire on Eating and Weight Patterns–Revised (QEWP-r; Spitzer et al., 1992). The QEWP-r is a self-report questionnaire designed to collect information regarding demographics, weight history, and eating patterns. The questionnaire also contains items that specifically test for DSM-IV criteria of BED. After completion at home, the questionnaires were returned to the university.

If respondents met the BED criteria or did not have any binge episodes, they were invited for a structured diagnostic interview that lasted about 1 hr and was conducted by a psychologist experienced in the assessment and treatment of eating disorders and obesity. The interviewer clarified and checked the DSM-IV items, especially those regarding quantity of food and extent of loss of control. The BED diagnosis was made if participants met the following criteria. First, respondents had to mention binge eating episodes. Binge eating was operationalized as eating an objectively large amount of food and a feeling that the eating was out of control (see Fairburn, 1987). Binge eating had to occur at least 2 days per week during the previous 6 months, and binge-eating episodes had to be associated with three or more behavioral indicators of loss of control—for example, eating much more rapidly than normal, eating until feeling uncomfortably full, or eating large amounts of food when not physically hungry (APA, 1994). Finally, respondents had to report marked distress regarding binge eating. After the diagnostic interview, participants were weighed in street clothes, without shoes, on a balance-beam scale and their height was measured.

Respondents were categorized as non-binge eaters if they fulfilled none of the criteria mentioned. We anticipated that comparisons of these two extreme groups would be the most likely to reveal relevant differences. Therefore, respondents who met some but not all of the criteria were excluded. Further exclusion criteria were: age younger than 18 or older than 50 years; concurrent treatment for weight loss; pregnancy; Body Mass Index (BMI) below 27; or concurrent DSM-IV diagnosis of psychosis, drug abuse, or alcoholism.

Participants who entered the study were between 21 and 49 years ($M = 38.3$, $SD = 7.1$). Their BMI ranged from 27.0 to 45.2 ($M = 33.4$, $SD = 4.2$). Participants reported a mean duration of obesity of 21.1 years ($SD = 8.5$) and a mean onset of obesity of 17.2 years ($SD = 7.6$). Binge eaters and non-binge eaters were compared on these variables using *t*-tests with Bonferroni correction for multiple testing. The results showed that obese binge eaters were significantly younger and had an earlier onset of obesity, whereas group differences in BMI and duration of obesity were not significant. BED participants reported binge eating on an average of 4 days per week ($SD = 1.7$), and an onset of binge eating at a mean age of 21.4 ($SD = 6.2$).

Procedure

Participants were invited to participate in a semi-structured face-to-face interview. The interview took between 30 and 45 min. All three interviewers had experience in measuring cognitions and working clinically with anorexic, bulimic, and/or obese patients. The interviewers were unaware of the clinical diagnosis of the participants. Participants were told that the purpose of the interview was to detect thoughts regarding shape, weight, and eating. All obese women were asked to report the thoughts that had run through their minds in situations in which they were struggling with their shape, weight, or eating during the 4 weeks preceding assessment. Most participants could ''automatically'' report several dysfunctional thoughts. If participants had difficulties reporting thoughts, several situations that were likely to trigger shape-, weight-, and eating-related cognitions were presented

to the participants. A checklist of these situations, taken from the literature, was constructed beforehand. Examples of such situations were: before or after weighing, when looking at your own body in a mirror, when others see your body at the swimming pool, when eating with other people, or when buying new clothes.

If people mentioned dysfunctional thoughts regarding shape, weight, and eating, interviewers explored the underlying schemas by using the ''downward arrow'' technique (Beck et al., 1993). At each belief, this technique points an arrow downward to the next underlying belief. Participants were asked what a *cognition* meant to them and what catastrophe could occur, with questions such as: ''If that cognition is true, what does it signify for you?'' or ''If that cognition is true, what could possibly happen?'' Sometimes, the result of the question was the elicitation of an underlying negative self-schema, formulated as an ''if ... then ...'' statement. The conditional assumption (''if ...'') stipulates the conditions under which the negative self-evaluation is applicable and, thus, becomes operative (Beck, 1996). If a participant did not mention a negative self-evaluation, they usually adhered to their more superficial thoughts—for example, that they were fat or could not control eating.

After dysfunctional cognitions had been identified, participants rated their degree of belief in these cognitions on Visual Analogue Scales (VASs), from 0, ''totally disbelieved in,'' to 100, ''totally believed in.'' The interviewers wrote down all cognitions on a whiteboard together with the corresponding degree of belief. If more than three cognitions were mentioned, the three cognitions believed in the most were selected for data analyses.

Finally, participants were given a number of questionnaires, including the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and three subscales (weight concern, shape concern, and eating concern) of the Eating Disorder Examination–Questionnaire (EDE-Q), a self–report version of the EDE (Fairburn & Beglin, 1994).

Classification of Cognitions

Three independent raters, all therapists in clinical practice and experienced in the treatment of eating disorders and obesity, were asked to categorize all cognitions (n = 222). In Beck's (1976) model, *dysfunctional cognitive content* is divided into automatic thoughts and underlying schemas. In this study, three categories were used: Negative Self-Schemas, Automatic Thoughts (weight/shape concern and control over eating), and Do Not Know. *Self-schemas* were defined as deeper cognitive structures that contain generalizations about the self combined with eating, weight, or shape concerns (e.g., ''If I eat too much, I am good for nothing''). Thus, negative self-schemas refer to negative self-evaluations. *Automatic thoughts* were defined as those ruminations or images that are typically experienced by the individual as occurring in their ongoing stream of thoughts regarding their shape and weight or loss of control over eating (e.g., ''If I have eaten too much, I can't stop eating any more''). The raters completed their task independently and were unaware of binge condition (binge eater/non-binge eater). They followed standardized instructions

that included definitions, descriptions, and examples of negative self-schemas and automatic thoughts.

Interrater reliability was calculated by means of Cohen's kappa, and the average interrater reliability among the three raters was high (.82). Of the 222 cognitions, 31 were dropped because there was not 100% agreement among the raters. Furthermore, all five cognitions in the Do Not Know category were excluded as well. Thus, 186 cognitions were included in further analyses.

RESULTS

Amount of Negative Self-Schemas and Belief in Cognitions

Of the 96 cognitions mentioned by obese binge eaters, 64.6% (62) were negative self-schemas and 35.4% (34) were automatic thoughts. Approximately the reverse was found among non-binge eaters: negative self-schemas comprised 25.6% (23) of all cognitions, automatic thoughts 74.4% (67). This difference in distribution was highly significant, $\chi^2(1) = 28.5$, $p < .001$.

A 2 (binge category: binge eater/non-binge eater) $\times$ 2 (cognitions: self-schema/automatic thought) analysis of variance (ANOVA) was used to test for differences in degree of belief. There was a main effect for binge category, $F(1,183) = 36.0$, $p < .001$, showing higher belief in cognitions for obese binge eaters ($M = 90.3$) than for obese non-binge eaters ($M = 80.0$). The difference in degree of belief for negative self-schemas versus automatic thoughts was not significant, $F(1,183) = .08$, NS.

Content of Negative Self-Schemas

In order to determine the thought content of negative self-schemas and automatic thoughts, a content analysis was conducted by researchers who were blind to binge category. Table I gives an overview of the classification of negative self-schemas. Of all negative self-schemas, 72% were related to lack of willpower, rejection by others, and unworthiness. Interestingly, negative self-schemas of binge eaters were most frequently related to rejection and unworthiness, whereas the majority of negative self-schemas reported by obese non-binge eaters were related to lack of willpower. This difference in distribution was highly significant, $\chi^2(1) = 7.8$, $p < .01$.

The automatic thoughts could be divided into two categories. Some automatic thoughts referred to shape or weight (e.g., "No matter how hard I try, I can't seem to lose weight" or "If I look in the mirror, I see a body that is out of all proportion"). Other automatic thoughts referred to control over eating (e.g., "If I've eaten too much, I can't stay in control"). Both obese binge eaters and obese non-binge eaters most frequently reported automatic thoughts referring to shape and weight (73.5% vs. 71.6%).

Table I. Themes and Examples of Negative Self-Schemas in Obese Binge Eaters and Obese Non-Binge Eaters

Themes	Examples	Schemas, binge eaters (n = 62)	Schemas, non-binge eaters (n = 23)
Weakness/no willpower	"If I eat forbidden food, I am a weakling" "If I gain weight, I am a person without willpower"	22.6%	43.5%
Rejection	"If I go to the swimming pool, people will reject me"	30.6%	8.7%
Unworthiness	"If I eat too much, I am good for nothing"	22.6%	8.7%
Disgusting	"If I look in the mirror, I see a disgusting person"	6.5%	4.3%
Prove one's worth	"Because I am fat, I always have to prove my worth"	1.6%	17.5%
Abnormal	"If I gain weight, I am physically and mentally abnormal"	3.2%	8.7%
Alone	"Without food, I am all alone"	6.5%	0.0%
Vulnerable	"Only if my hips are narrow, I am not vulnerable to criticism"	1.6%	4.3%
Others		4.8%	4.3%

Schematics versus Aschematics

The focus of the analysis now shifts from cognitions (n = 186) to respondents (n = 73). One individual had no cognitions for which there was a 100% agreement between the raters and was dropped from the analyses. Three individuals had one remaining cognition, 27 individuals had two remaining cognitions, and 43 individuals had three remaining cognitions. If half or more of a participant's remaining cognitions were negative self-schemas, the respondent was regarded as schematic. If half or more of a participant's cognitions were automatic thoughts, the respondent was regarded as aschematic. A MANCOVA was conducted on eating pathology measures (shape concern, weight concern, eating concern) and general psychopathology (depression, self-esteem) with two between-subjects factors: binge category (binge eater/non-binge eater) and schema category (schematic/aschematic), while controlling for degree of belief. Results of the MANCOVA[4] indicated a multivariate main effect for binge category, $F(5,65) = 18.8$, $p < .001$. All univariate F-tests revealed significant results: depression, $F(1,69) = 22.9$, $p < .001$; self-esteem, $F(1,69) = 14.7$, $p < .001$; eating concern, $F(1,69) = 64.4$, $p < .001$; shape concern, $F(1,69) = 70.2$, $p < .001$; and weight concern, $F(1,69) = 29.6$, $p < .001$, reflecting more general psychopathology and more eating pathology for obese binge eaters than obese non-binge eaters. Furthermore, a significant multivariate main effect for schemas was found, $F(5,65) = 2.9$, $p < .05$. Univariate F-tests revealed significant effects for depression, $F(1,69) = 6.3$, $p < .05$, and self-esteem, $F(1,69) = 4.5$, $p < .05$. Irrespective of binge category, schematic subjects were more depressed and had lower self-esteem than aschematic subjects. Schema category had no significant

[4]There was essentially no difference between this analysis and the MANCOVA analysis with age as covariate.

influence on any of the three subscales of the EDE. There was no significant interaction effect for schema category and binge category. Table II provides means and standard deviations for binge eaters and non-binge eaters with and without schemas on depression, self-esteem, and eating pathology. Combining the finding that negative self-schemas were most frequently found in obese binge eaters with the observation that obese binge eaters were significantly more depressed than obese non-binge eaters, the question was raised whether the relationship between negative self-schemas and binge status might be carried by depression. It is not unlikely that depression influenced the accessibility of these negative self-schemas and that these negative self-schemas were thus more easily detected in the obese binge eaters. To explore this issue further, a logistic regression on schema category was conducted with binge status and depression as predictors. Both binge status and depression significantly contributed to the prediction of schema category.

DISCUSSION

This study found evidence that obese binge eaters and obese non-binge eaters differed with respect to the three cognitions in which they most believed, as detected by a clinical interview. The findings showed that obese binge eaters mentioned more self-schemas regarding negative self-evaluations than did obese non-binge eaters. Obese binge eaters believed their negative self-schemas and automatic thoughts to a greater extent than obese non-binge eaters. Moreover, obese binge eaters differed in the content of their negative self-schemas as compared to obese non-binge eaters. Finally, schematic participants reported more depression and lower self-esteem than aschematic participants.

A robust finding was that negative self-schemas, which reflect negative self-evaluations influenced by shape, weight, or eating, were more frequently found in obese binge eaters than in obese non-binge eaters. Considering the obese binge eaters as more eating disordered than the obese non-binge eaters, this finding supports Vitousek and Hollon (1990), who postulated that eating-disordered individuals develop organized cognitive structures that unite views of the self with

Table II. Means and Standard Deviations for Binge Eaters and Non-Binge Eaters with and without Negative Self-Schemas on Measures of Generic Psychopathology and Eating Pathology

	Obese binge eaters				Obese non-binge eaters			
	Schematics		Aschematics		Schematics		Aschematics	
	Mean	(*SD*)	Mean	(*SD*)	Mean	(*SD*)	Mean	(*SD*)
BDI[a]	19.9	(7.8)	17.1	(5.1)	11.6	(4.1)	6.7	(4.7)
RSES[b]	28.4	(4.6)	25.4	(5.0)	22.6	(3.7)	19.9	(5.3)
EDE-Q eating concern[c]	3.3	(1.0)	3.9	(1.2)	1.8	(0.7)	1.1	(0.5)
EDE-Q shape concern	5.0	(0.6)	5.3	(0.3)	3.0	(1.1)	3.4	(0.9)
EDE-Q weight concern	4.1	(0.6)	4.0	(0.6)	2.8	(0.9)	2.8	(0.8)

[a]BDI = Beck Depression Inventory.
[b]RSE = Rosenberg Self-Esteem Scale.
[c]EDE-Q = Eating Disorder Examination–Questionnaire.

beliefs about weight, shape, and eating. It could be argued that the relationship between negative self-schemas and binge status might be carried by depression. Depression can influence the accessibility of negative self-schemas. However, a logistic regression on schema category revealed that both binge status and depression contributed significantly to the prediction of schema category. Depression, binge status, and schemas are related, without giving an answer to possible underlying causal structures.

The content analysis of the negative self-schemas showed that schemas of binge eaters and non-binge eaters differed qualitatively. Obese binge eaters were more worried about rejection and unworthiness, whereas the non-binge eaters mainly worried about lack of willpower. Cognitions regarding rejection are associated with low self-esteem (Leary, Schreindorfer, & Haupt, 1995), whereas cognitions of unworthiness and lack of willpower can be related to personal loss and failure, which are highly associated with depression (e.g., Clark & Steer, 1996).

The data suggest that cognitive therapy might be useful in the treatment of obesity for binge eaters as well as non-binge eaters. Apart from challenging dysfunctional thoughts about weight, shape, and eating, it is necessary to address negative self-schemas. In case of obese binge eaters, one should be mindful of negative self-schemas regarding rejection and unworthiness, whereas in case of obese non-binge eaters negative self-schemas concerning lack of willpower might be relevant. Obese binge eaters believed their negative self-schemas even to a greater extent, and it is known that changes in affect are related to degree of belief in negative cognitions (Clark, 1988). Schema-focused techniques, such as those introduced by Young (1990), may be useful; these include the ''life review'' technique, in which patients are asked to provide evidence from their lives that contradicts and supports their schemas, and ''schema flashcards,'' index cards that incorporate the evidence against and for the schemas.

The present study shows that obese subjects are characterized by dysfunctional cognitions concerning eating, shape, and weight. It is assumed that obese individuals develop negative self-schemas in which views of the self are combined with beliefs about weight, shape, and eating. The negative self-schemas were highly accessible, especially in the binge-eating subgroup, presumably because binge eaters were more depressed and had lower self-esteem. Binge eaters reported more negative self-schemas of rejection and unworthiness, whereas non-binge eaters mainly worried about lack of willpower. These findings are a step toward the clearer elucidation of dysfunctional cognitions in obese persons and suggest that the obese binge eaters as well as obese non-binge eaters might benefit from cognitive treatment.

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